

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 05/03/2010 has been entered.

Allowable Subject Matter

2. Claims 1 - 21 and 23 - 27 are pending, of which claims 1 and 20 are independent.
3. The following is an examiner's statement of reasons for allowance. The bolded text below indicates the claim language that distinguishes Applicants' invention from the art of record.

For claim 1, as amended, none of the art of record teaches an ink jet printhead comprising: one or more ejection modules each including:

a silicon chip having a front **surface and a top surface,**
a plurality of heating elements arranged parallel to the top surface of the silicon chip,

a plurality of ejection cells located above the heating elements, delivery channels to deliver ink to the ejection cells,

a main distribution channel defined in the top surface of the silicon chip orthogonally to the delivery channels, the main distribution channel extending along the front surface of the silicon chip without interruptions, and

a nozzle layer integrated with the top surface of the silicon chip, the nozzle layer including ejection nozzles located above the respective ejection cells, wherein the ejection nozzles are parallel to the heating elements and the top surface of the silicon chip;

a support for mounting the module or the modules and which defines a feeding duct for the ink, the feeding duct being in fluid communication with the front surface of the silicon chip and the main distribution channel;

a seal between the module or the modules and said support, the seal arranged to form a fluid seal between the feeding duct of the support and the ejection cells of the module or of the modules; and

a plurality of ribs extending between the delivery channels and the main distribution channel, the ribs extending transversely to the main distribution channel to form a further distribution channel orthogonal to the main distribution channel, the ribs bearing against the nozzle layer;

wherein there is one pair of ribs for each delivery channel or one pair of ribs for a plurality of delivery channels.

Since claims 2 - 19 depend from allowed independent claim 1, they are allowed.

For claim 20, as amended, none of the art of record teaches process for manufacturing an ink jet printhead, comprising the steps of:

preparing ejector modules, each including:

a chip substrate **having a front surface and a top surface,**

a plurality of resistors **arranged parallel to the top surface of the chip substrate,**

a plurality of ejection cells located above the resistors,

delivery channels **to deliver ink to the ejection cells,**

a main distribution channel, **defined in the top surface of the silicon chip, the main distribution channel** extending orthogonally to the delivery channels, and **along the front surface of the chip substrate without interruptions,** and

a nozzle layer having ejection nozzles **aligned above the resistors and adjacent to an edge of the module, said ejection nozzles being parallel to the resistors and the top surface of the chip substrate**

providing a support having an ink feeding duct for one or more modules, the ink feeding duct being in fluid communication with the front **surface of the chip substrate** and the main distribution channel;

mounting the module or modules on said support so as to have the main distribution channel or channels in fluid communication with said feeding duct;

hydraulically seating the nozzle layer of the module or of the modules from said support, for ink- tightness in feeding the ink between the feeding duct and the nozzles through said delivery channels;

making an etching on a given face of the chip **substrate** to produce said main distribution channel **extending along the front surface of the chip substrate without interruptions**;

producing **sacrificial volumes** for defining the limits of the ejection cells above the resistors and the delivery channels above the area;

applying a structural layer over said **sacrificial volumes** to define said nozzle layer;

wherein said etching step produces on said face, in addition to the main distribution channel, a series of ribs that extend transversely across the main distribution channel **between the delivery channels and the main distribution channel** to form a further distribution channel orthogonal to the main distribution channel and in fluid communication with both said delivery channels and said main distribution channel, and in which a part of the **sacrificial volumes** extend into the space between said ribs and on said main distribution channel,

further wherein a part of the structural layer is applied on the ribs and remains fastened on said ribs after removal of the **sacrificial volumes**.

Since claims 21 and 23 - 27 depend from allowed independent claim 20, they are allowed.

4. Any comments considered necessary by Applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander C. Witkowski whose telephone number is (571) 270-3795. The examiner can normally be reached on Monday to Saturday, 8:00 AM to 6:30 PM EST, except on Tuesday to Thursday of alternate weeks.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander C. Witkowski/
Examiner, Art Unit 2853

/Stephen D Meier/
Supervisory Patent Examiner, Art Unit 2853